

What is claimed is:

1. A liquid crystal display comprising:

a liquid crystal display panel having an array substrate on which a scan line and a data line are formed, a color filter substrate on which a common electrode is formed, and a liquid crystal layer interposed between the array and color filter substrates and operated in an OCB mode;

a source driver to supply an image signal to the data line;

a scan driver to supply a scan signal to the scan line; and

a controller, responsive to a power source, to control a bias voltage to be supplied to the common electrode, which has a voltage level higher than that of a common voltage supplied to the common electrode, so as to improve a transition speed of the liquid crystal layer into a bend alignment state, to control the common voltage to be supplied to the common electrode when the liquid crystal layer is transited into the bend alignment state so as to display an image using the image signal, and to control the bias voltage to be supplied to the common electrode when the image signal is not input so as to maintain the bend alignment state of the liquid crystal layer.

2. The liquid crystal display of claim 1, wherein the controller controls an OSD to be displayed on the liquid crystal display panel before the bend alignment state of the liquid crystal layer is broken down when the image signal is not inputted.

3. The liquid crystal display of claim 2, wherein the controller controls the bias voltage to be supplied to the common electrode while the OSD is displayed on the liquid crystal display panel.

4. The liquid crystal display of claim 1, wherein the controller controls the bias voltage to be supplied to the common electrode when the image signal is re-inputted and controls the common voltage to be supplied to the common electrode in lieu of the bias voltage when the liquid crystal layer is transited into the bend alignment state.

5. The liquid crystal display of claim 1, wherein the bias voltage comprises an alternating current voltage.

6. The liquid crystal display of claim 5, wherein the bias voltage comprises a square wave.

7. The liquid crystal display of claim 1, wherein the bias voltage is generated from a power source voltage supplied to the scan driver.

8. The liquid crystal display of claim 1, wherein the controller controls the common voltage and the bias voltage to be alternately supplied to the common electrode in response to the power source.

9. The liquid crystal display of claim 1, further comprising:
a DC-DC converter to generate the bias voltage; and
a switching part to receive the bias voltage and the common voltage and to output the bias voltage or the common voltage to the common electrode in response to control of the controller.

10. The liquid crystal display of claim 1, wherein the bias voltage is supplied to the common electrode for a first time so as to transit the liquid crystal layer into the bend alignment state and the common voltage is supplied to the common electrode after the first time so as to display the image on the liquid crystal display panel.

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11. A method of driving a liquid crystal display including a liquid crystal display panel having a liquid crystal operated in an OCB mode, a liquid crystal driving module having a scan driver and a source driver, and a backlight assembly disposed under the liquid crystal display panel, comprising:

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responsive to a power source, controlling a bias voltage to be supplied to the liquid crystal display panel so as to improve a transition speed of the liquid crystal into a bend alignment state such that the liquid crystal is operated in the OCB mode;

displaying an image after the liquid crystal is transited into the bend alignment state;

checking whether or not a data signal for the image is inputted;

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displaying the image when the data signal is inputted;

checking whether or not a first time passes when the data signal is not inputted;

displaying an OSD representing that the data signal is not inputted when the first time passes;

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controlling the liquid crystal to be transited into the bend alignment state while the OSD is displayed;

checking whether or not the data signal for the image is inputted; and

displaying the image after canceling the OSD when the data signal is input.

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12. The method of claim 11, wherein the controlling of the liquid crystal further comprises:

cutting off the bias voltage supplied to the liquid crystal display panel and successively supplying a common voltage to the liquid crystal display panel when the first time passes;

supplying a driving voltage to the backlight assembly with the common voltage supplied to the liquid crystal display panel; and

supplying an image signal and a scan signal for the OSD to the liquid crystal display panel.

13. The method of claim 11, wherein the controlling of the liquid crystal comprises:

controlling the image and scan signals for the OSD to be supplied to the liquid crystal display panel;

outputting the bias voltage and common voltage to the liquid crystal display panel; and

supplying the bias voltage to the liquid crystal display panel so as to transit the liquid crystal into the bend alignment state.

14. The method of claim 11, wherein the controlling of the liquid crystal comprises:

controlling the image and scan signals for the OSD to be supplied to the liquid crystal display panel;

controlling output of the bias voltage and common voltage; and

supplying alternately the bias voltage and common voltage to the liquid crystal display panel so as to transit the liquid crystal into the bend alignment state.

15. An apparatus for driving a liquid crystal display including an array substrate having a scan line and a data line, a color filter substrate having a common electrode, and a liquid crystal interposed between the array substrate and color filter substrate and operated in an OCB mode, the driving apparatus comprising;

5 a source driver to supply an image signal to the data line;

a scan driver to supply a scan signal to the scan line; and

a controller, responsive to a power source, to control a bias voltage to be supplied to the common electrode, which has a voltage level higher than that of a common voltage supplied to the common electrode, so as to improve a transition speed of the liquid crystal layer into a bend alignment state, to control the common voltage to be supplied to the common electrode when the liquid crystal layer is transited into the bend alignment state so as to display an image using the image signal, and to control the bias voltage to be supplied to the common electrode when the image signal is not inputted so as to maintain the bend alignment state of the liquid crystal layer.

15 16. A liquid crystal display comprising:

a liquid crystal display panel having a first substrate on which a scan line and a data line are formed, a second substrate on which a common electrode is formed, and a liquid crystal layer interposed between the first and second substrates and operated in an OCB mode in response to a bias voltage;

20 a source driver that supplies an image signal to the data line in response to a first control signal;

a scan driver that supplies a scan signal to the scan line in response to a second control signal;

25 a DC-DC converter that generates the bias voltage having a first voltage level;

a switching part that receives the bias voltage and a common voltage having a second voltage level lower than the first voltage level and outputs the bias voltage or the common voltage in response to third and fourth control signals; and

a controller that receives a power signal and the image signal, supplies the third control signal to the switching part in response to the power signal so as to apply the bias voltage to the common electrode during a predetermined first time, supplies the first, second and fourth control signals to the source driver, scan driver and switching part, respectively, in response to the image signal so as to supply the common voltage to the common electrode after the predetermined first time, and supplies the third control signal to the switching part when the image signal is not input so as to supply the bias voltage to the common electrode.

17. The liquid crystal display of claim 16, wherein the controller controls an OSD to be displayed on the liquid crystal display panel before the bend alignment state of the liquid crystal layer is broken down when the image signal is not inputted.

18. The liquid crystal display of claim 17, wherein the controller supplies the third control signal to the switching part such that the bias voltage is supplied to the common electrode while the OSD is displayed on the liquid crystal display panel.

19. The liquid crystal display of claim 16, wherein the controller supplies the third control signal to the switching part when the image signal is re-inputted and supplies the fourth control signal to the switching part when the predetermined first time passes.

20. The liquid crystal display of claim 16, wherein the bias voltage comprises an alternating current voltage.